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TO : Chief, R&D Branch

DATE: 3 February 1959

FROM : Chief, R&D Laboratory

SUBJECT: KE-6 Keyer

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1. Here is additional information regarding the (electrical and mechanical characteristics) of the KE-6 Keyer.

2. The keyer, after rework by the manufacturer, was returned to the R&D Laboratory for electrical and mechanical tests. The test results are outlined in A&A Report No. 182-C (Part III).



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Attachment:

A&A Report No. 182-C (Part III)

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A&A Report No. 182-C (Part III)

Project No. 2004-144

3 February 1959

## KE-6 KEYER ELECTRICAL AND MECHANICAL TEST RESULTS ANALYSIS AND APPRAISAL

### 1. INTRODUCTION

One KE-6 Keyer was delivered to the R&D Laboratory for tests. Previous to this date the keyer had been returned to the manufacturer for rework to eliminate several undesirable electrical and mechanical features.

### 2. ELECTRICAL TEST

The KE-6 Keyer performed during the electrical test as follows:

- (a) The motor speed is approximately 650 rpm.
- (b) The voltage measured across the motor input terminals is 5.3 volts, DC.
- (c) The keyer transmits the correct international Morse Code character when the appropriate keyer button is fully depressed. The keyer transmits incorrect characters when the keyer button is not fully depressed.

### 3. MECHANICAL TEST

The improvements noted in A&A Report No. 182-C (Part II) regarding the mechanical characteristics of earlier models of the KE-6 Keyer are applicable to the present model. These improvements include good workmanship, workable latch on the case, reduction in gear train rollout, and the use of nylon material to form the keyer buttons.

The recommendations, contained in the referenced report, to improve the keyer have, in part, been incorporated into the present model as follows:

- (a) A cable clamp has been installed in the keyer to secure the keyer cable.
- (b) The collector ring contact tip has been silver plated. The referenced report recommended that the entire contact be silver plated to insure that good electrical contact is maintained with the etched circuit board.

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- (c) The manufacturer has attempted to comply with the recommendation which states that the individual segment pin contacts beneath each key button should be made the same height. The common contact for each key should be made approximately 1/64 inch lower than the individual segment pin contact. The mechanical inspection of the present model revealed that several segment pin contacts are lower in height than are the common contacts. Therefore, it is still possible to transmit incorrectly when the keyer button is depressed.

#### 4. CONCLUSIONS AND RECOMMENDATIONS

The KE-6 Keyer failed to operate satisfactorily during the electrical test. It is requested that the following recommendations be incorporated in future models.

- (a) The segment pin contacts should be raised approximately 1/64 inch above the height of the common key contacts. This will insure that the correct character is transmitted when the key is depressed. This may be accomplished by increasing, slightly, the spring tension on the segment pin contacts and forcing the contacts to protrude farther out of the retaining holes.
- (b) The motor speed should be increased to approximately 900 - 1000 rpm maximum. The speed may be increased by reducing the load on the motor. This may be accomplished by an adjustment of the spring tension of the collector ring contact. The collector ring contact tip should be pressured against the brush housing contact hub with the least possible friction and should, at the same time, insure continuity is maintained. The gear train should, also, be examined to insure that it rotates with the least amount of friction.

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